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THE GENUS SABATIA IN NEW ENGLAND.

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(Plate 121.)

In southern New England the genus *Sabatia* is represented by some of the most beautiful plants of our flora, members of a genus which finds its greatest development on the coastal plain southward. The writer's propensity for northern exploration had taken him for many summers to regions beyond the range of the genus and it was not until the summer of 1913 that he first saw any of the plants growing: the beautiful slender *S. campanulata* (L.) Torr. or *S. gracilis* (Michx.) Salisb. and the splendid large-flowered plant which in Massachusetts has always passed as *S. chloroides* (Michx.) Pursh or recently as *S. dodecandra* (L.) BSP.

The material of *S. campanulata* collected by the writer on peaty and sandy pond-shores at Barnstable on Cape Cod is quite like the Nantucket plant and specimens collected by others (Williams, Greenman, Sinnott, Faxon) at Barnstable. This plant has for some reason been considered as possibly *S. stellaris* Pursh or as transitional to *S. stellaris* and it was mentioned by Gray in the *Synoptical Flora* as "an ambiguous form." This confusion of the two species arose presumably through over-emphasis on the length of the calyx-lobes and the style-branches and the breadth of the leaves, characters which, as well pointed out by Bicknell,[1] "are unstable in a very marked degree." Mr. Bicknell, however, notes two characters which the writer has independently observed as sound, and the words of the former may be

[1] Bicknell, Bull. Torr. Bot. Cl. xlii. 31 (1915).

appropriately quoted: "Much less so [unstable] are two other characters which, indeed, seem to be almost always sharply distinctive although they have been little emphasized in descriptions. In *S. stellaris* the main leaves, broadest at or above the middle, are distinctly narrowed to the base and the usually acute apex, and the entire plant, unless carefully pressed, readily turns black in drying. *Sabatia campanulata*, on the contrary, shows little or no discoloration on the herbarium sheet, and the commonly obtuse leaves, linear, linear-oblong, oval or, low on the stem, actually ovate, are broadly sessile or subclasping."

Besides the excellent distinctive characters pointed out by Bicknell there are some others which seem equally important. *S. stellaris* is a plant of saline or brackish marshes and all the specimens examined by the writer from throughout the range, from Massachusetts to eastern Mexico, are annual (or possibly biennial). *S. campanulata*, on the other hand, is at least in Massachusetts a plant of fresh sandy pondshores or sphagnous bogs, and such labels from the southern states as indicate habitats read: "low, grassy pine barrens and meadows," "damp pine barrens," etc., indicating that the New England habitat of the plant is not unique. Furthermore, all the material of *S. campanulata* which has been carefully collected shows it to be a slightly caespitose perennial with a short subligneous rhizome. The majority of specimens, merely picked or pulled, have no roots but seem to have been broken from a crown. One other character, not so constant, but fairly reliable, is in the bracting of the lateral peduncles. In well developed *S. stellaris* all the peduncles are naked; in well developed *S. campanulata* the lateral peduncles usually bear 1 or 2 median bracts.

As already emphasized *Sabatia campanulata* is a plant of the fresh sandy or peaty shores and marshes. In New England it is very local, seen by the writer only from three regions of Massachusetts: Nantucket Island; the borders of Mary Dunn's Ponds in Barnstable on Cape Cod; and a single station, Pembroke in Plymouth County, where it was collected on September 10, 1884, by W. L. Foster. It was reported by the late Alfred W. Hosmer [1] from a single station in Concord, Massachusetts, but the writer has not seen Mr. Hosmer's material. Its presence as an indigenous plant in Concord is open to some question owing to the transplanting activities of the late Minot Pratt, but the occurrence in Concord or adjacent towns of such

[1] RHODORA, i. 224 (1899).

characteristic coastal plain species as *Sparganium lucidum*, *Sagittaria teres*, *Scirpus Longii*, and *Utricularia resupinata*, lends weight to the possibility that the Sabatia is also indigenous.

Sabatia stellaris, the halophytic annual, is little known in New England east of the western shores of Narragansett Bay. It is on the marshes of Martha's Vineyard and locally at Dartmouth, Massachusetts. The writer has seen no material from east of Buzzard's Bay, but there is a report of the plant at Amesbury and Salisbury at the mouth of the Merrimac,[1] and an old record of it at York, Maine.[2] The latter record is unsupported by specimens though there may originally have been material; but Mr. Sears's record of the plant from Amesbury and Salisbury was based on a single specimen now preserved in the herbarium of the Peabody Academy of Science. Through the kindness of Professor A. P. Morse the writer has examined this plant which was found on September 22, 1885, by Mr. Eben True whose communication states that he found but a single plant in a hay field. The specimen is not *S. stellaris* but very characteristic *S. angularis* (L.) Pursh; and its occurrence as a single individual in a planted field indicates that it was only a casual adventive. In his note Mr. Sears refers to *S. stellaris* as found at Pembroke, Massachusetts; but the plant upon which the Pembroke record was based is Mr. Foster's specimen of *S. campanulata* above referred to.

Besides *S. angularis*, just referred to as casually adventive in New England, the related *S. campestris* Nutt. has occasionally been found as a casual in fields and waste places, but it has not, apparently, become established in New England.

The other two species of New England are the larger-flowered plants which generally pass as *Sabatia dodecandra* (L.) BSP. or *S. chloroides* (Michx.) Pursh. *S. dodecandra* was based on *Chironia dodecandra* L. Sp. Pl. i. 190 (1753) which in turn went back to "*Gentiana floribus duodecim-petalis*," etc. of Gronovius, Virg. 29 (1739). The latter, based upon Clayton's no. 120 from Virginia was described as having the corolla-lobes "lanceolate" and Mr. S. F. Blake, who has examined the specimen, reports the corolla-lobes to be only 5 mm. wide. Later, in the Systema, ed. 12, 267 (1767), Linnaeus transferred his *Chironia dodecandra*, without additional characterization, to the Old World genus *Chlora;* and in 1803 Michaux described from New York and

[1] J. H. Sears, Rhodora, x. 43 (1908).
[2] Goodale, Proc. Portl. Soc. Nat. Hist. i. 60 (1862).

New Jersey as *Chironia chloroides* a plant with "floribus 7–13-partitis" and corolla-lobes "oblong," but with *Chlora dodecandra* L. cited as a synonym, the name presumably changed on account of the lack of precision in the Linnean specific name.

This species, *Sabatia dodecandra*, occurs in coastal marshes from Long Island southward, and judging by herbarium labels and local records it is commonly a plant of saline or brackish marshes. Thus Torrey, who gives a beautiful plate of the plant, ascribes it to "Brackish bog meadows on the Island of New-York, and on Long Island. August;" [1] Taylor, writing of the region from Connecticut to southern New Jersey, says: "In tidal marshes throughout the range; so far not reported inland, nor up the tidal rivers, except in Cape May" [2]; and Stone, writing of southern New Jersey, says: "Frequent on the brackish meadows from the Hackensack marshes south. In the Cape May peninsula it occurs also in fresh marshes over a mile from the coast. . . . *Fl.*—Late July to late August." [3] This plant, usually of brackish marshes, is apparently a perennial (but herbarium specimens very inadequately display the base) and it ranges from 0.8–6 dm. in height; its leaves are nearly uniform up to the inflorescence, oblong to oblong-lanceolate, blunt or acutish; the calyx-lobes are herbaceous or foliaceous, 3–5-nerved, 6–17 mm. long, 1–3 mm. broad, and the calyx-tube is somewhat nerved or corrugated; the corolla-lobes are narrowly oblong-spatulate to oblanceolate, acutish or obtuse, 1.5–2.5 cm. long, 4–9 mm. wide (in dried specimens), with the margins not overlapping; the yellow spot at the base of each segment is elongate, slightly 3-lobed at summit or subentire, and 0.7–2.3 mm. broad.

Whether or not *Sabatia dodecandra* actually occurs in New England is at present an open question. Three stations are recorded in Connecticut: "Rare. Marshes near the coast: Old Lyme (F. H. Dart), Saybrook (Berzelius Catalogue), Guilford (Miss K. Dudley)." [4] Of the Lyme station Dr. C. B. Graves writes, that it was found by Dr. Dart "a good many years ago." Dr. Graves has no material and the colony is now extinct. The Saybrook station was reported in the Berzelius Catalogue, but Mr. A. F. Hill has kindly sent me the entire representation of the species from the Eaton Herbarium and the

[1] Torr. Fl. N. Y. ii. 114, t. 84 (1843).
[2] Taylor, Fl. Vic. N. Y. 504 (1915).
[3] Stone, Pl. So. N. J. 640 (1912).
[4] Graves et al., Cat. Fl. Pl. and Ferns Ct. 319 (1910).

Saybrook station is unrepresented. Similarly, recent collections from Guilford do not show any large-flowered Sabatia there. The plant may now be extinct in Connecticut and until actual specimens can be examined we cannot tell whether the records rest upon true *S. dodecandra* (which is probable) or upon the commoner New England representative of it.

In southeastern Massachusetts no large-flowered Sabatia is known to the writer in brackish marshes, although *S. dodecandra* is to be sought in the Buzzard's Bay region. In Norfolk, Plymouth, Bristol and Barnstable Counties a large Sabatia, which has been passing as *S. dodecandra*, is common and so invariably a plant of damp sandy or peaty margins of fresh ponds or of acid sphagnous bogs, that the Massachusetts botanist, supposing his plant to be *S. dodecandra*, is naturally impressed by Dr. Stone's obvious surprise at finding on the Cape May peninsula *S. dodecandra* "in fresh marshes over a mile from the coast." The Massachusetts plant is rarely if ever found on the actual coast; at least all the herbarium-labels indicate fresh habitats and a majority of the stations are from five to ten miles from the nearest salt water. In many morphological characters the plant of the fresh pond-shores of Massachusetts (and likewise of southern Rhode Island) departs from the somewhat halophytic *S. dodecandra*. The Massachusetts plant is freely stoloniferous, even at the beginning of the flowering season carefully collected specimens exhibiting elongate stolons with well-developed rosettes of acuminate leaves; the plant is taller (2.5–8 dm. high); the basal leaves are oblanceolate and acuminate, distinctly longer than the firm lance-acuminate subulate-tipped cauline ones; the calyx-lobes are firm and linear-subulate, not foliaceous, with slightly hyaline margin, very obscurely 1–3 nerved, 5–15 mm. long, 0.5–1.5 mm. broad, and the calyx-tube nerveless; the corolla-lobes are cuneate-obovate, rounded or emarginate at summit, 1.5–3 cm. long, 6–15 mm. broad, with the margins commonly meeting or overlapping, so that the expanded flower suggests the head of a single *Dahlia* or *Cosmos*. The yellow spot at the base of each lobe is much broader than in *S. dodecandra* (2.5–5 mm. broad) and commonly has 3 long pointed lobes, so that the complete brown-bordered yellow central star of the flower has 21–36 rays. This plant of the Massachusetts pond margins begins flowering in June — some weeks earlier than *S. dodecandra*, apparently,— and is in its prime through July, although belated or small secondary flowers may be found through

the autumn, especially on plants which have been broken off by the omnivorous flower-picker.

In short, the plant of fresh pond-shores of southeastern Massachusetts and southern Rhode Island is quite distinct from the often halophytic *S. dodecandra*. Its nearest affinity seems to be rather with the elegant *S. decandra* (Walt.) Harper which occurs about pine-barren ponds of Georgia, Florida and Alabama and which has a similar calyx and the round-tipped corolla-lobes of the Massachusetts plant; but in *S. decandra* the corolla-lobes are more spatulately narrowed to base and with a comparatively slender yellow spot, the calyx-lobes are much longer, and the plant is nonstoloniferous (apparently biennial), with mostly round-tipped basal leaves. The chief diagnostic characters of these three species are brought out in Plate 121, kindly prepared by Mr. F. Schuyler Mathews.

So far as the writer can determine, the plant of Massachusetts and Rhode Island has not heretofore been distinguished and it is a great pleasure to be able to associate with this splendid species the name of the scholarly New England botanist and sympathetic friend of all botanists, Dr. George Golding Kennedy. The New England plant may, therefore, be called

SABATIA **Kennedyana**, n. sp. Perennis valde stolonifera, stolonibus flagelliformibus apice rosulatis; caule florifero solitario 2.5–8 dm. alto; foliis basilariis anguste oblanceolatis acuminatis 3–8 cm. longis 4–15 mm. latis; foliis caulinis 5–11-jugis (rarissime ternatis) firmis lanceolato-acuminatis basi sessilibus vel subamplexicaulibus apice mucronatis; floribus 1–16 longe pedunculatis apud examplara nunquam mutilata 3–7 cm. latis; tubo calycis campanulato-hemisphaerico enervato, lobis calycis 7–12 lineari-subulatis nec foliaceis obscure 1–3-nervatis 5–15 mm. longis 0.5–1.5 mm. latis margine hyalinis; lobis corollae roseis 7–12 cuneato-obovatis apice rotundatis vel emarginatis 1.5–3 cm. longis 6–15 mm. latis, macula basilari lutea brunneo-marginata late oblonga vel cuneato-obovata subtruncata 3-lobata 5–9 mm. longa 2.5–5 mm. lata; antheris 7–12; stylo stigmatibusque subaequantibus; capsula breviter ellipsoidea 6–10 mm. longa apice rotundata vel emarginata, valvulis hyalino-marginatis — Sandy or peaty margins of fresh ponds or in sphagnous bogs, Massachusetts and Rhode Island. MASSACHUSETTS: Great Pond, South Weymouth, September 11, 1903, *Lillian Woodbury:* border of pond, Scituate, September 20, 1914, *F. F. Forbes;* beach of Snake Pond, Kingston, October 25, 1914, *Fernald;* Plymouth, *Oakes et al.;* sandy shore of Clear Pond, Plymouth, August 30, 1913, *Fernald, Hunnewell & Long,* no. 10,219; damp sandy beach of Boot Pond, Plymouth, September 6, 1913, *Fernald, Hunnewell & Long,* no. 10,220; sandy shore of Cooper's Pond, Carver, August 30, 1913, *Fernald, Hunnewell & Long,* no.

10,218; Nemasket River near Lake Assawampsett, Lakeville, August 10, 1887, *C. H. Morss;* damp sandy shore of Loon Pond, Lakeville, August 26, 1913, *Fernald & Long*, no. 10,216; sandy shore of Clear Pond, Lakeville, August 26, 1913, *Fernald & Long*, no. 10,217; Taunton, 1883, *Mrs. H. D. Wilmarth;* wet, sandy border of North Watuppa Lake, Fall River, August 15, 1913, *S. N. F. Sanford* (plant with whorls of 3 and 4 leaves); wet sandy border of cranberry-bog, Dartmouth, August 24, 1908, *S. N. F. Sanford;* borders of ponds, Centreville, Barnstable, July 16, 1899, July 20, 1900, *Clara Imogene Cheney;* shore of Wequawket Pond, Centreville, Barnstable, July 4, 1896, *E. F. Williams* (TYPE in Gray Herb.); Nine Mile Pond, Barnstable, September 4, 1898, *Greenman, Williams;* damp sandy beach of Dennis Pond, Yarmouth, September 19, 1913, *Fernald & Long*, no. 10,222; shore of Long Pond, Yarmouth, August 19, 1907, *E. W. Sinnott;* Brewster, August 31, 1914, *F. S. Collins*, no. 3,194; margin of bog, Harwich, July 6, 1912, *F. S. Collins*, no. 1,497; damp sandy and peaty margin of Emery Pond, Chatham, September 9, 1913, *Fernald & Long*, no. 10,221; shallow water, Crystal Lake, Orleans, August 22, 1901, *H. P. Wilson;* shore of Meetinghouse Pond, Eastham, July 28, 1907, *F. S. Collins*, no. 357. RHODE ISLAND: shore of Gorton's Pond, Apponaug, August 18, 1886, *J. F. Collins;* shore of Worden's Pond, South Kingston, *Thurber et al.*

Forma **candida**, n. f., lobis corollae albis, macula basilari nec brunneo-marginata.—At scattered stations throughout the range. TYPE: Weymouth, Massachusetts, August 8, 1905, *Miss Underwood* (Gray Herb.).

Of the Weymouth station Mrs. Clark wrote in RHODORA, vii. 38 (1905): "there are hundreds of the plants none of which show the slightest tinge of pink in the flowers. No typical pink flowers can be found nearer than at a pond in South Weymouth, fully three miles away, where....all....have borne pink flowers. The white form shows no constant differences from the type except in color. The petals are not greenish nor creamy, but a very pure white, and the brown markings usually found at the 'eye' of the pink flowers are wanting in the white form the centre of which is a delicate green or yellow color. The plants seem larger and more vigorous than those of the type....On two sides of the large pond the white flowers are massed so closely together that when seen from the street they bring to mind a field of daisies in early summer."

The very striking albino of *S. campanulata* seems not to have had a convenient designation and it may be called

S. CAMPANULATA (L.) Torr., forma **albina**, n. f., lobis corollae albis. —Occasional throughout the range of the species. TYPE: peaty margin of Small Pond, Barnstable, Massachusetts, July 31, 1913, *Fernald*, no. 10,224 (Herb. New Engl. Bot. Cl.).

The white-flowered form of *S. stellaris* is forma *albiflora* Britton, Bull. Torr. Bot. Cl. xvii. 125 (1890).

GRAY HERBARIUM.

EXPLANATION OF PLATE 121.

(All figures × 1).

SABATIA KENNEDYANA. 1 and 2. Base and portion of inflorescence of the type specimen from Centerville, Massachusetts, *E. F. Williams.* 3. Fruit from Loon Pond, Lakeville, Massachusetts, *Fernald & Long*, no. 10,216.

S. DODECANDRA. 4 and 5. Flower and fruit from Hackensack Marshes, New Jersey, *D. C. Eaton.*

S. DECANDRA. 6, 7 and 8. Basal rosette, flower and fruit from Sumter Co., Georgia, *Harper*, no. 461.

NOMENCLATORIAL TRANSFERS.

L. H. BAILEY.

IN the compiling of the Standard Cyclopedia of Horticulture, it is the intention to avoid the making of new combinations in the names of plants. Unavoidably, a relatively very small number of new combinations have arisen, mostly of horticultural varieties and species of minor importance; it is the purpose to make a separate dated list of these when the work is completed. In Vols. V and VI, however, it has been necessary to make an unusual number and some of them affect North American species; and it has seemed best to publish some of them in advance.

In some of this work I have had the aid of F. Tracy Hubbard, and a number of the combinations are his, as indicated in every case.

It has been the desire, in the compilation of the Cyclopedia, to accept new generic limitations with caution. The temper of the present time is to find differences, as opposed to the tendency of the immediately preceding workers to find agreements. The analytic intention is the mark of systematic work in this generation as the synthetic intention was the mark of the past generation. There is reason to expect a return from the method of disunion to the method of relationships; and as a work designed for the use of horticulturists,